

WHAT IS CLAIMED IS:

1. A charge-coupled device (CCD) sensing apparatus, comprising:
  - a first photo sensor set with a plurality of first photo sensors for receiving a light signal and generating a plurality of corresponding first charge signals; and
    - a first CCD shift register including a first CCD component set and a second CCD component set, wherein the first CCD component set can receive a first part of the first charge signals; the first part of the first charge signals are then sequentially output from the first CCD component set to a first charge storage component and then converted to corresponding voltages; the second CCD component set can receive the remaining part of the first charge signals; and the remaining part of the first charge signals are then sequentially output from the second CCD component set to a second charge storage component and then converted to corresponding voltages.
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2. The CCD sensing apparatus according to claim 1, wherein the first photo sensors are of the same size, and also are spaced at the same intervals.
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3. The CCD sensing apparatus according to claim 1, wherein the first

CCD component set and the second CCD component set are electrically isolated.

4. The CCD sensing apparatus according to claim 1, wherein the first

5 CCD component set includes the same number of CCD components as the second CCD component set.

5. The CCD sensing apparatus according to claim 1, further comprising:

10 a second photo sensor set with a plurality of second photo sensors for receiving a light signal and generating a plurality of corresponding second charge signals, wherein the second photo sensor set and the first photo sensor set are arranged in a staggered-type configuration; and

15 a second CCD shift register including a third CCD component set and a fourth CCD component set, wherein the third CCD component set can receive a part of the second charge signals; the second charge signals are then sequentially output from the third CCD component set to a third charge storage component and then converted to corresponding voltages; the fourth CCD component set can receive the remaining part of the second charge signals; and the remaining part of the second charge signals are then sequentially output from the fourth CCD components set to a fourth charge storage component and then converted to corresponding voltages.

6. The CCD sensing apparatus according to claim 5, wherein the second photo sensors are of the same size as the first photo sensors, and also are spaced at the same interval as the first photo sensors.

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7. The CCD sensing apparatus according to claim 1, wherein the CCD sensing apparatus is used in a scanner.

8. A charge-coupled device (CCD) sensing apparatus, comprising:

10 a first photo sensor set with a plurality of first photo sensors for receiving a light signal and generating a plurality of corresponding first charge signals; and

a first CCD shift register including a first CCD component set and a second CCD component set, wherein the first CCD component set can

15 receive a first part of the first charge signals; the first part of the first charge signals are then sequentially output from the first CCD component set to a first charge storage component and then converted to corresponding voltages;

the second CCD component set can receive a second part of the first charge signals; and the second part of the first charge signals are then sequentially

20 output from the second CCD component set to a second charge storage component and then converted to corresponding voltages.

a second CCD shift register, wherein the first CCD shift register and the second CCD shift register are located on opposite sides of the first photo sensor set; the second CCD shift register includes a third CCD component set and a fourth CCD component set; the third CCD component set can receive a 5 third part of the first charge signals; the third part of the first charge signals are then sequentially output from the third CCD component set to a third charge storage component and then converted to corresponding voltages; the fourth CCD component set can receive the remaining part of the first charge signals; and the remaining part of the first charge signals are then 10 sequentially output from the fourth CCD component set to a fourth charge storage component and then converted to corresponding voltages.

9. A charge-coupled device (CCD) sensing apparatus, comprising:  
a first photo sensor set having a plurality of first photo sensors for  
15 receiving a light signal and generating a plurality of corresponding first charge signals; and  
a first CCD shift register comprising P CCD component sets, where P is a positive integer greater than 2, wherein each of the P CCD component sets is coupled to corresponding first charge storage components; each of the 20 P CCD component sets can receive part of the first charge signals, the charge signals are then sequentially output from each of the P CCD component sets

to the corresponding first charge storage components and then converted to corresponding voltages.

10. The CCD sensing apparatus, according to claim 9, wherein the first  
5 photo sensors are of the same size, and also are spaced at the same interval.

11. The CCD sensing apparatus according to claim 9, wherein the P CCD component sets are electrically isolated from each other.

10 12. The CCD sensing apparatus according to claim 9, wherein each of the P CCD component sets includes the same number of CCD components.

13. The CCD sensing apparatus according to claim 9, further comprising:

a second photo sensor set having a plurality of second photo sensors  
15 for receiving a light signal and generating a plurality of corresponding second charge signals, wherein the second photo sensor set and the first photo sensor set are arranged in a staggered-type configuration; and

a second CCD shift register including Q CCD component sets, where  
Q is a positive integer greater than 2, wherein each of the Q CCD component  
20 sets is coupled to a second charge storage component; each of the Q CCD

component sets can receive part of the second charge signals; and the charge signals are then sequentially output from each of the Q CCD component sets to the corresponding second charge storage component and then converted to corresponding voltages.

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14. The CCD sensing apparatus according to claim 13, wherein the second photo sensors are of the same size as the first photo sensors, and are also spaced at the same interval as the first photo sensors.

10 15. The CCD sensing apparatus according to claim 9, wherein the CCD sensing apparatus is used in a scanner.

16. A charge-coupled device (CCD) sensing apparatus, comprising:

15 a first photo sensor set having a plurality of first photo sensors for receiving a light signal and generating a plurality of corresponding first charge signals; and

a first CCD shift register comprising P CCD component sets, where P is a positive integer greater than 2, wherein each of the P CCD component sets is coupled to corresponding first charge storage components;

20 a second CCD shift register, wherein the first CCD shift register and the second CCD shift register are located on opposite sides of the first photo

sensor set; the second CCD shift register comprises Q CCD component sets, where Q is a positive integer greater than 2; each of the Q CCD component sets is coupled to second charge storage components;

each of the P CCD component sets and Q CCD component sets can receive

- 5 part of the first charge signals; and the charge signals are then sequentially output from each of the P CCD component sets and Q CCD component sets to the corresponding first charge storage components and the corresponding second charge storage components and then converted to corresponding voltages accordingly.

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